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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
KAZUSHI SATO, ET AL.	: EXAMINER: HOLDER, ANNER N.
SERIAL NO: 10/509,682	:
FILED: OCTOBER 12, 2004	: GROUP ART UNIT: 2621
FOR: CODING DEVICE AND METHOD, DECODING DEVICE AND METHOD, RECORDING MEDIUM, AND PROGRAM	:

APPEAL BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicants appeal the outstanding Final Rejection of May 14, 2008, finally rejecting each of pending Claims 25 and 26.

I. REAL PARTY IN INTEREST

The above-noted application is assigned to Sony Corporation, which is the real party in interest, having a place of business at Tokyo, Japan.

II. RELATED APPEALS AND INTERFERENCES

Applicant and Applicant's representative are not aware of any related appeals or interferences that will directly effect or be directly affected by or having a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 25 and 26 are pending in this application and the rejection of each of Claims 25 and 26 is being appealed.

Original Claims 1-24 were cancelled, and Claims 25 and 26 were added during prosecution of this application.

IV. STATUS OF AMENDMENTS

In response to the first Office Action dated July 19, 2007, an Amendment was filed on January 22, 2008. A final Office Action was issued on May 14, 2008. Accordingly, the filed Amendment has been considered by the Examiner and is reflected in the attached claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 25 sets forth an encoding method for adaptively carrying out field-based or frame-based encoding processing at a macroblock level with image information as an input. The method of Claim 25 is generally supported by Figures 26-28 and pages 46-55 in the specification. See also p. 58, lines 1-8, which indicates that the means recited in Claim 26 can be implemented in hardware or by a computer programmed with special-purpose software.

In particular, Claim 25 recites a first generation step of generating a context model corresponding to a frame/field flag indicating whether the encoding processing at the macroblock level is field-based or frame-based, which finds supports, e.g., in Figure 27, element 91; and page 49, lines 8-14. See also Figure 26, element 53, and page 46, lines 21-25, which describe the frame/field flag.

Further, Claim 25 recites a second generation step of generating a context model corresponding to a syntax element for carrying out the frame-based or the field-based encoding processing, which finds supports, e.g., in Figure 26, element 58; Figure 27,

elements 92 and 94; and page 49, line 15 to page 55, line 22, which describes the generation of various context models.

Further, Claim 25 clarifies that the context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring the current macroblock, which finds supports, e.g., in Equations (25-1) to 26 and page 53, lines 4-16. In this non-limiting embodiment, if the current macroblock is C, the generation of the context models in Equations (25-1) to (25-3) is based on the value $e_k(C)$, which is calculated as a sum of an absolute value of motion vector information of neighboring macroblocks A and B (See Fig. 6), as shown in Equation (26).

In addition, Claim 25 clarifies that if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is applied to the context model corresponding to the motion vector information of the current macroblock, which finds supports, e.g., in page 53, lines 17-20. In this non-limiting embodiment, if current macroblock C is subject to field-based encoding and neighboring macroblock B is subject to frame-based encoding (see p. 53, lines 5 and 17), the vertical component of the motion vector information corresponding to the neighboring macroblock, i.e., $mvd_{l\_frame}(A)$ is converted as shown in Equation (27) and then applied to Equation (26).

Finally, Claim 25 recites an encoding step of carrying out the encoding processing using the context model corresponding to the motion vector information of the current macroblock generated in the second generation step, which finds supports, e.g., in Figure 26, element 58; Figure 27, element 98; and page 52, lines 2-10.

Claim 26 sets forth an encoding apparatus for adaptively carrying out field-based or frame-based encoding processing at a macroblock level with image information as an input. The apparatus of Claim 26 is generally supported by Figures 26-28 and pages 46-55 in the specification. See also p. 58, lines 1-8, which indicates that the means recited in Claim 26 can be implemented in hardware or by a computer programmed with special-purpose software.

In particular, Claim 26 recites means for generating a context model corresponding to a frame/field flag indicating whether the encoding processing at the macroblock level is field-based or frame-based, which finds supports, e.g., in Figure 27, element 91; and page 49, lines 8-14. See also Figure 26, element 53, and page 46, lines 21-25, which describe the frame/field flag.

Further, Claim 26 recites means for generating a context model corresponding to a syntax element for carrying out the frame-based or the field-based encoding processing, which finds supports, e.g., in Figure 26, element 58; Figure 27, elements 92 and 94; and page 49, line 15 to page 55, line 22, which describes the generation of various context models.

Further, Claim 26 clarifies that the context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring the current macroblock, which finds supports, e.g., in Equations (25-1) to 26 and page 53, lines 4-16. In this non-limiting embodiment, if the current macroblock is C, the generation of the context models in Equations (25-1) to (25-3) is based on the value $e_k(C)$, which is calculated as a sum of an absolute value of motion vector information of neighboring macroblocks A and B (See Fig. 6), as shown in Equation (26).

In addition, Claim 26 clarifies that if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by

converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is applied to the context model corresponding to the motion vector information of the current macroblock, which finds supports, e.g., in page 53, lines 17-20. In this non-limiting embodiment, if current macroblock C is subject to field-based encoding and neighboring macroblock B is subject to frame-based encoding (see p. 53, lines 5 and 17), the vertical component of the motion vector information corresponding to the neighboring macroblock, i.e., $mvd_{l\_frame}(A)$ is converted as shown in Equation (27) and then applied to Equation (26).

Finally, Claim 26 recites means for carrying out the encoding processing using the context model corresponding to the motion vector information of the current macroblock generated by the means for generating a context model corresponding to the syntax element, which finds supports, e.g., in Figure 26, element 58; Figure 27, element 98; and page 52, lines 2-10.

See also p. 58, lines 1-8, which indicates that the means recited in Claim 26 can be implemented in hardware or by a computer programmed with special-purpose software.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection being appealed are whether the teachings of U.S. Patent No. 6,005,980 to Eifrig et al. (hereinafter "the '980 patent") in view of U.S. Patent No. 6,272,179 to Kadono (hereinafter "the '179 patent") renders obvious the subject matter of Claims 25 and 26 under 35 U.S.C. § 103(a).

VII. ARGUMENT

Claim 25

Claim 25 is directed to an encoding method for adaptively carrying out field-based or frame-based encoding processing at a macroblock level with image information as an input, the encoding method comprising: (1) a first generation step of generating a context model corresponding to a frame/field flag indicating whether the encoding processing at the macroblock level is field-based or frame-based; (2) a second generation step of generating a context model corresponding to a syntax element for carrying out the frame-based or the field-based encoding processing, wherein the context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring the current macroblock, and if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is applied to the context model corresponding to the motion vector information of the current macroblock; and (3) an encoding step of carrying out the encoding processing using the context model corresponding to the motion vector information of the current macroblock generated in the second generation step.

Regarding the rejection of Claim 25 under 35 U.S.C. § 103(a), the Office Action asserts that the '980 patent discloses everything in Claim 25 with the exception of "if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding,"[1] and relies on the '179 patent to remedy that deficiency. However, as

[1] See page 3 of the outstanding Office Action.

discussed in more detail below, Applicants note that the Office Action does not provide any motivation for one of ordinary skill in the art to make the suggested combination.

The '980 patent is directed to a method for providing horizontal and vertical motion vector components for use in differentially encoding respective horizontal and vertical motion vector components of a current block of a digital video image. In particular, the '980 patent discloses that the method includes the steps of selecting a horizontal motion vector component for use in differentially encoding the horizontal motion vector component of the current block according to a value derived from the horizontal motion vector components of first, second, and third candidate blocks; and selecting a vertical motion vector component for use in differentially encoding the vertical motion vector component of the current macroblock according to a value derived from the vertical motion vector components of the first, second, and third candidate blocks.

In particular, as shown in Figure 6, the '980 patent discloses an advanced prediction technique in which it is decided whether a current macroblock of 16x16 pixels should be ME/MC coded as is, or divided into 4 blocks of 8x8 pixels, wherein each 8x8 block is ME/MC coded separately, or whether field-based motion estimation should be used, wherein pixel lines of the macroblock are reordered to group the same-field lines in two 16x8 field blocks, and each 16x8 field block is separately ME/MC coded.[2] Further, as shown in Figure 6, the '980 patent discloses a field mode image in which the pixel lines are permuted to form the same-field luminance blocks.

However, Applicants respectfully submit that the '980 patent fails to disclose that a context model corresponding to motion vector information of a current macroblock is generated based on a sum of absolute value of motion vector information macroblocks neighboring the current macroblock, as recited in Claim 25. In a non-limiting example,

[2] See '980 patent, column 10, lines 30-40.

Applicants refer the Examiner to equations 25-1, 25-2, 25-3, and 26 in the present specification.

In this regard, Applicants note that the Office Action cites to columns 10 and 11 as disclosing this limitation. However, Applicants note that these passages in the '980 patent are directed to determining whether 16x6 prediction, 8x8 motion compensation, or field-based motion estimation is to be used. In particular, Applicants note that the '980 patent discloses the use of the "Sum of Absolute Differences (SAD)" for both a single 16x16 macroblock as well as for the four 8x8 sub-macroblocks and does a comparison of the SAD for the 16x6 macroblock and the sum of the SADs for the 8x8 macroblocks.[3] Moreover, Applicants note that the Sum of Absolute Differences method is described in column 8, and refers to finding an (x, y) pair that minimizes the differences between a reference block and a current block, such that the resulting x and y coordinates represent the motion vector. In particular, the Sum of Absolute Differences method looks at the pixel values in the current block with respect to the pixels in the reference frame, and sums the absolute value of the differences over all of the pixel locations. Thus, the Sum of Absolute Differences method is a method of determining a motion vector. Thus, the method shown in '980 columns 10 and 11 compares the motion vectors from the four 8x8 blocks to the motion vector for the 16x16 block to determine what type of motion composition prediction to use.

However, the '980 patent does not disclose finding the sum of an absolute value of motion vector information of macroblocks that neighbor the current macroblock to determine a context model corresponding to motion vector information of a current macroblock, as required by Claim 25. The '980 patent does not identify a current macroblock as well as the neighboring macoblocks, and does not disclose that motion vector information of the

[3] See '980 patent, column 10, line 61 through column 11, line 6.

neighboring macroblocks is added together and then used to determine the context model for the current macroblock, as required by Claim 25.

Moreover, as admitted in the outstanding Office Action, the '980 patent fails to disclose that if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and to apply to the context model corresponding to the current macroblock, as recited in Claim 25.

The '179 patent is directed to an image coding apparatus that performs an adaptive coding process in macroblock units that each comprise a predetermined number of pixels into which the image space is divided. Further, the '179 patent discloses that the image coding apparatus includes a color motion vector coding unit to code either a frame-based color motion vector or a field-based color motion vector of a target macroblock based on a prediction value; and a shape motion vector coding unit that codes a frame-based shape motion vector of the target macroblock that is used in a frame-by-frame motion composition coding process for an interlaced shaped signal.

However, Applicants respectfully submit that the '179 patent fails to disclose that a context model corresponding to motion vector information of a current macroblock is based on a sum of an absolute value of motion vector information of macroblocks neighboring the current macroblock, as recited in Claim 25. In particular, Applicants note that the Office Action does not rely upon the '179 patent as disclosing this limitation.

Further, Applicants respectfully submit that the '179 patent fails to disclose that if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the

neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is supplied to the context model corresponding to the current macroblock, as recited in Claim 25. In particular, Applicants note that Claim 25 clarifies that this calculation of the motion vector information is part of an encoding process. However, Applicants note that the second embodiment shown in Figure 2 of the '179 patent, which is discussed in columns 31 and 32 of the '179 patent, cited by the Office Action, relate to a decoding process, not an encoding process. In this regard, Applicants note that the '179 patent discloses that, with regard to Figure 12D, that "when the reference macroblock is the macroblock which has been subjected to the frame-by-frame motion composition process, the motion vector stored in the frame in the memory 304a are referred to, while [when] the reference macroblock is the macroblock which has been subjected to the field-by-field motion composition process, the frame-based motion vector resulting from converting the field-based motion vectors stored in the field MV memory 304b into the frame-based motion vector by the framed MV converter 310b is referred to."[4] Thus, the '179 patent discloses that framed-based motion vectors are used in the decoding process for reference macroblocks that are adjacent to a macroblock MB0 dependending upon the type of motion compensation used for that reference macroblock.

However, Applicants note that Claim 25 requires that if the current macroblock is subject to **field-based** encoding and a neighboring macroblock is subject to **frame-based** encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for **field-based** encoding. However, the '179 patent appears to disclose something different, i.e., consistent use of

[4] '179 patent, column 32, lines 12-21.

frame-based motion vectors and not any conversion from frame-based to field-based, as required by Claim 25. Moreover, as discussed above, the discussion in column 32 of the '179 patent relates to decoding, not encoding. Moreover, the '179 patent is silent regarding converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding, as required by Claim 25.

Thus, no matter how the teachings of the '980 and '179 patents are combined, the combination does not teach or suggest that a context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring a current macroblock, as required by Claim 25.

Moreover, no matter how the teachings of the '980 and '179 patents are combined, the combination does not teach or suggest that if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subject to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is applied to the context model corresponding to the motion vector information of the current macroblock, as required by Claim 25. Accordingly, Applicants respectfully submit that a *prima facie* case obviousness has not been established and the rejection of Claim 25 should be withdrawn.

In the outstanding Office Action, the Office Action does not provide any motivation for combining the teachings of the '980 and '179 patents.[5] In this regard, Applicants note that in KSR v. Teleflex, the Federal circuit stated that "...rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated

[5] See page 3 of the outstanding Office Action.

reasoning with some rational underpinning to support the legal conclusion of obviousness." (In re Kahn, 441 F.3d 977, 988 (CA Fed. 2006) cited with approval in KSR).

In the present case, the Office has failed to provide any articulated reasoning with any rational underpinning to support the legal conclusion of obviousness, but instead has provided mere conclusory statements. Accordingly, for this additional reason, Applicants respectfully submit that a *prima facie* case of obviousness has not been established and that the rejection of Claim 25 should be withdrawn.

Claim 26

Claim 26 is directed to An encoding apparatus for adaptively carrying out field-based or frame-based encoding processing at a macroblock level with image information as an input, the encoding apparatus comprising: (1) means for generating a context model corresponding to a frame/field flag indicating whether the encoding processing at the macroblock level is field-based or frame-based; (2) means for generating a context model corresponding to a syntax element for carrying out the frame-based or the field-based encoding processing, wherein the context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring the current macroblock, and if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is applied to the context model corresponding to the motion vector information of the current macroblock; and (3) means for carrying out the encoding processing using the context model corresponding to the motion vector information of the

current macroblock generated by the means for generating a context model corresponding to the syntax element.

Regarding the rejection of Claim 26 under 35 U.S.C. § 103(a), the Office Action merely advises Applicants to "...see [the] discussion of claim 25 above."

As discussed above, the '980 patent is directed to a method for providing horizontal and vertical motion vector components for use in differentially encoding respective horizontal and vertical motion vector components of a current block of a digital video image. In particular, the '980 patent discloses that the method includes the steps of selecting a horizontal motion vector component for use in differentially encoding the horizontal motion vector component of the current block according to a value derived from the horizontal motion vector components of first, second, and third candidate blocks; and selecting a vertical motion vector component for use in differentially encoding the vertical motion vector component of the current macroblock according to a value derived from the vertical motion vector components of the first, second, and third candidate blocks.

In particular, as shown in Figure 6, the '980 patent discloses an advanced prediction technique in which it is decided whether a current macroblock of 16x16 pixels should be ME/MC coded as is, or divided into 4 blocks of 8x8 pixels, wherein each 8x8 block is ME/MC coded separately, or whether field-based motion estimation should be used, wherein pixel lines of the macroblock are reordered to group the same-field lines in two 16x8 field blocks, and each 16x8 field block is separately ME/MC coded.[6] Further, as shown in Figure 6, the '980 patent discloses a field mode image in which the pixel lines are permuted to form the same-field luminance blocks.

However, Applicants respectfully submit that the '980 patent fails to disclose means for generating a context model corresponding to a syntax element for carrying out the frame-

[6] See '980 patent, column 10, lines 30-40.

based or the field-based encoding processing, wherein the context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring the current macroblock, as recited in Claim 26.

In this regard, Applicants note that, regarding Claim 25, the Office Action cites to columns 10 and 11 as disclosing this limitation. However, Applicants note that these passages in the '980 patent are directed to determining whether 16x6 prediction, 8x8 motion compensation, or field-based motion estimation is to be used. In particular, Applicants note that the '980 patent discloses the use of the "Sum of Absolute Differences (SAD)" for both a single 16x16 macroblock as well as for the four 8x8 sub-macroblocks and does a comparison of the SAD for the 16x6 macroblock and the sum of the SADs for the 8x8 macroblocks.[7] Moreover, Applicants note that the Sum of Absolute Differences method is described in column 8, and refers to finding an (x, y) pair that minimizes the differences between a reference block and a current block, such that the resulting x and y coordinates represent the motion vector. In particular, the Sum of Absolute Differences method looks at the pixel values in the current block with respect to the pixels in the reference frame, and sums the absolute value of the differences over all of the pixel locations. Thus, the Sum of Absolute Differences method is a method of determining a motion vector. Thus, the method shown in '980 columns 10 and 11 compares the motion vectors from the four 8x8 blocks to the motion vector for the 16x16 block to determine what type of motion composition prediction to use.

However, the '980 patent does not disclose finding the sum of an absolute value of motion vector information of macroblocks that neighbor the current macroblock to determine a context model corresponding to motion vector information of a current macroblock, as required by Claim 26. The '980 patent does not identify a current macroblock as well as the

[7] See '980 patent, column 10, line 61 through column 11, line 6.

neighboring macoblocks, and does not disclose that motion vector information of the neighboring macroblocks is added together and then used to determine the context model for the current macroblock, as required by Claim 26.

Moreover, as admitted in the outstanding Office Action, the '980 patent fails to disclose that if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and to apply to the context model corresponding to the current macroblock, as recited in Claim 26.

As discussed above, the '179 patent is directed to an image coding apparatus that performs an adaptive coding process in macroblock units that each comprise a predetermined number of pixels into which the image space is divided. Further, the '179 patent discloses that the image coding apparatus includes a color motion vector coding unit to code either a frame-based color motion vector or a field-based color motion vector of a target macroblock based on a prediction value; and a shape motion vector coding unit that codes a frame-based shape motion vector of the target macroblock that is used in a frame-by-frame motion composition coding process for an interlaced shaped signal.

However, Applicants respectfully submit that the '179 patent fails to disclose means for generating a context model corresponding to a syntax element for carrying out the frame-based or the field-based encoding processing, wherein the context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring the current macroblock, as recited in Claim 26. In particular, Applicants note that the Office Action does not rely upon the '179 patent as disclosing this limitation.

Further, Applicants respectfully submit that the '179 patent fails to disclose that if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is supplied to the context model corresponding to the current macroblock, as recited in Claim 26. In particular, Applicants note that Claim 26 clarifies that this calculation of the motion vector information is part of an encoding process. However, Applicants note that the second embodiment shown in Figure 2 of the '179 patent, which is discussed in columns 31 and 32 of the '179 patent, cited by the Office Action, relate to a decoding process, not an encoding process. In this regard, Applicants note that the '179 patent discloses that, with regard to Figure 12D, that "when the reference macroblock is the macroblock which has been subjected to the frame-by-frame motion composition process, the motion vector stored in the frame in the memory 304a are referred to, while [when] the reference macroblock is the macroblock which has been subjected to the field-by-field motion composition process, the frame-based motion vector resulting from converting the field-based motion vectors stored in the field MV memory 304b into the frame-based motion vector by the framed MV converter 310b is referred to."[8] Thus, the '179 patent discloses that framed-based motion vectors are used in the decoding process for reference macroblocks that are adjacent to a macroblock MB0 dependending upon the type of motion compensation used for that reference macroblock.

However, Applicants note that Claim 26 requires that if the current macroblock is subject to **field-based** encoding and a neighboring macroblock is subject to **frame-based** encoding, the motion vector information corresponding to the neighboring macroblock is

[8] '179 patent, column 32, lines 12-21.

calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for **field-based** encoding. However, the '179 patent appears to disclose something different, i.e., consistent use of frame-based motion vectors and no conversion from frame-based to field-based, as required by Claim 26.

Moreover, as discussed above, the discussion in column 32 of the '179 patent relates to decoding, not encoding.

Moreover, the '179 patent is silent regarding converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding, as required by Claim 26.

Thus, no matter how the teachings of the '980 and '179 patents are combined, the combination does not teach or suggest that a context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring a current macroblock, as required by Claim 26.

Moreover, no matter how the teachings of the '980 and '179 patents are combined, the combination does not teach or suggest that if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subject to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is applied to the context model corresponding to the motion vector information of the current macroblock, as required by Claim 26. Accordingly, Applicants respectfully submit that a *prima facie* case obviousness has not been established and the rejection of Claim 26 should be withdrawn.

As discussed above, the Office Action does not provide any motivation for combining the teachings of the '980 and '179 patents.[9] In this regard, Applicants note that in KSR v. Teleflex, the Federal circuit stated that "...rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." (In re Kahn, 441 F.3d 977, 988 (CA Fed. 2006) cited with approval in KSR).

In the present case, the Office has failed to provide any articulated reasoning with any rational underpinning to support the legal conclusion of obviousness, but instead has provided mere conclusory statements. Accordingly, for this additional reason, Applicants respectfully submit that a *prima facie* case of obviousness has not been established and that the rejection of Claim 26 should be withdrawn.

[9] See page 3 of the outstanding Office Action.

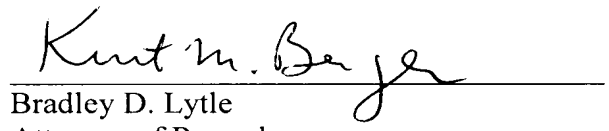
VIII. CONCLUSION

For the foregoing reasons, Applicants respectfully submit that each of Claims 25 and 26 patentably distinguishes over the combination of teachings of the '980 and '179 patents.

Therefore, the outstanding rejections must be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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CLAIMS APPENDIX

25. (Rejected) An encoding method for adaptively carrying out field-based or frame-based encoding processing at a macroblock level with image information as an input, the encoding method comprising:

a first generation step of generating a context model corresponding to a frame/field flag indicating whether the encoding processing at the macroblock level is field-based or frame-based;

a second generation step of generating a context model corresponding to a syntax element for carrying out the frame-based or the field-based encoding processing, wherein the context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring the current macroblock, and if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is applied to the context model corresponding to the motion vector information of the current macroblock; and

an encoding step of carrying out the encoding processing using the context model corresponding to the motion vector information of the current macroblock generated in the second generation step.

26. (Rejected) An encoding apparatus for adaptively carrying out field-based or frame-based encoding processing at a macroblock level with image information as an input, the encoding apparatus comprising:

means for generating a context model corresponding to a frame/field flag indicating whether the encoding processing at the macroblock level is field-based or frame-based;

means for generating a context model corresponding to a syntax element for carrying out the frame-based or the field-based encoding processing, wherein the context model corresponding to motion vector information of a current macroblock is generated based on a sum of an absolute value of motion vector information of macroblocks neighboring the current macroblock, and if the current macroblock is subjected to the field-based encoding and a neighboring macroblock is subjected to frame-based encoding, the motion vector information corresponding to the neighboring macroblock is calculated by converting the vertical component of the motion vector information corresponding to the neighboring macroblock to the equivalent for field-based encoding and is applied to the context model corresponding to the motion vector information of the current macroblock; and

means for carrying out the encoding processing using the context model corresponding to the motion vector information of the current macroblock generated by the means for generating a context model corresponding to the syntax element.

EVIDENCE APPENDIX

None

RELATED PROCEEDING APPENDIX

None